

Distributed Spacecraft Autonomy (DSA)

Active Technology Project (2017 - 2022)



Project Introduction

The DSA project will enable a swarm of spacecraft to autonomously operate as a single functioning unit, or "collective" to accomplish a common task. The one-year formulation effort will survey existing capabilities and identify technology gaps and a development effort that will mature a capability that can support future spacecraft swarm missions. The next three years of development involve defining the requirements of spacecraft and ground software, developing the autonomy software, scaling the autonomy software in a simulation with up to 100 spacecraft, and deploying the spacecraft for operations and experiments.

Anticipated Benefits

Autonomous decision making will be needed for deep-space multi-spacecraft missions due to latency, bandwidth constraints, and mission complexity. Additionally, autonomy can significantly increase the effectiveness of multi-spacecraft missions by operating them as a collective rather than individually.

Primary U.S. Work Locations and Key Partners

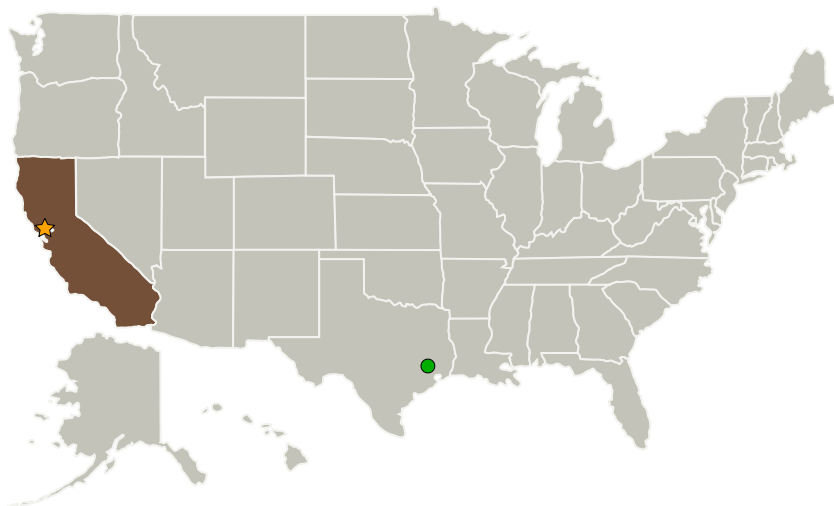
Distributed Spacecraft
Autonomy

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
● Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations

California

Project Website:

https://www.nasa.gov/directorates/spacetech/game_changing_development/in

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Game Changing Development

Project Management

Program Director:

Mary J Werkheiser

Program Manager:

Gary F Meyering

Project Manager:

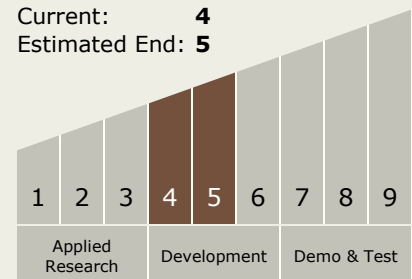
Nicholas B Cramer

Technology Maturity (TRL)

Start: 4

Current: 4

Estimated End: 5



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Technology Areas

Primary:

- TX04 Robotic Systems

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System

Supported Mission Type

Push